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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,782	10/31/2003	Rex K. Frost	10559-863001	1688

20985 7590 10/20/2006

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EXAMINER	
ROSASCO, STEPHEN D	
ART UNIT	**PAPER NUMBER**
1756	

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/698,782	FROST ET AL.	
	Examiner	Art Unit	
	Stephen Rosasco	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *27-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/01/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Applicant's election without traverse of Group I (claims 1-26) in the reply filed on 8/28/06 is acknowledged.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (5,821,014).

Chen et al. teach a method using at least one correction feature having an associated width to correct for proximity effects of two adjacent primary features on a mask in a lithographic process using distance is less than said wavelength;

placing said number of correction features between said two adjacent features.

And wherein said a single correction feature is placed between said two primary features.

Claims 1-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Liebmann et al. (6,964,032).

Liebmann et al. teach (see claims) a method of designing a mask for imaging an integrated circuit. A critical pitch is identified for the IC design, and optimal inner and outer radial coordinates of an annular illumination source are determined so that the resulting image projected through the mask will be optimized for the full range of pitches in the design layout. A relationship is provided for determining an optimal inner radius and outer radius for the annular illumination source. The number and placement of SRAFs are added to the mask design so that the resulting range of pitches substantially correspond to the critical pitch.

Therefore, Liebmann et al. teaches how to keep the pitch constant by placement of pattern features.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (5,821,014) in view of Liebmann et al. (6,964,032).

The claimed invention is directed to a method for accommodating diffraction in the printing of features on a substrate. The method includes identifying a pair of features to be printed using a corresponding pair of patterning elements and increasing a separation

distance between the pair of patterning elements while maintaining the sufficiently small pitch between the corresponding imaged features. The pitch of the pair of features can be sufficiently small that, upon printing, diffraction will make a separation between the features smaller than a separation between the corresponding pair of patterning elements.

Chen is included here as discussed above.

The teachings of Chen et al. differ from those of the applicant in that the applicant teaches in claims 14-26 using computer aid for design and implementation of the method; and in claims 16-26 the claimed invention addresses the method with respect to the step of distorting or adjusting one of the dimensions of a patterning element.

Liebmann et al. teach (see claims) a method of designing a mask for imaging an integrated circuit. A critical pitch is identified for the IC design, and optimal inner and outer radial coordinates of an annular illumination source are determined so that the resulting image projected through the mask will be optimized for the full range of pitches in the design layout. A relationship is provided for determining an optimal inner radius and outer radius for the annular illumination source. The number and placement of SRAFs are added to the mask design so that the resulting range of pitches substantially correspond to the critical pitch.

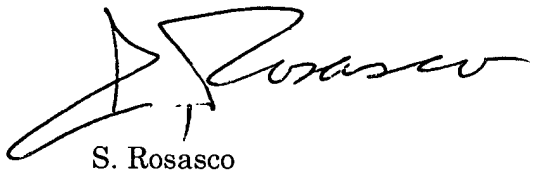
Therefore, Liebmann et al. teaches how to keep the pitch constant by placement of pattern features.

It would have been obvious to one having ordinary skill in the art to take the teachings of Chen et al. and combine them with the teachings of Liebmann et al. in order to make the claimed invention because it would have been obvious to one in the art to incorporate the known advantages of using computer aided design.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Stephen Rosasco whose telephone number is (571) 272-1389. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM. The Examiner's supervisor, Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Rosasco
Primary Examiner
Art Unit 1756

S.Rosasco
10/11/06